

Pacific Northwest National Laboratory<sup>1</sup> (PNNL) appreciates the opportunity to submit the following comments to the U.S. Environmental Protection Agency (EPA) in conjunction with RCRA Docket 2003-0012, “Application of Hazardous Waste Regulations in Academic and Research Laboratories.” Our comments follow the outline provided in the June 3, 2003 Federal Register notice.

### Waste Determination

*When should the hazardous waste determination be made in a laboratory setting?*

In this discussion, we use the term “designation” to describe the process of identifying all applicable waste codes for a given waste stream.

For waste streams routinely generated without process variability, laboratory operations can comply with the requirement to designate wastes at the point and time of generation.

For newly generated waste streams, or waste streams that exhibit variability in composition, we believe that full designation should be performed once satellite accumulation is complete. This could be completed at a 90-day accumulation area, at a treatment/storage facility operated by the laboratory facility, or possibly at the satellite accumulation area. During satellite accumulation, the known major risks of the material would be determined by the person generating the waste (with assistance from laboratory support staff as necessary) and indicated through labeling. Adequate information must be available to accumulate the waste safely, e.g. a proper container must be selected, addition of incompatible materials must be avoided, incompatible wastes segregated, and in Washington State, major risk(s) must be identified on the container.

It is impractical to expect that full waste designation for newly generated laboratory wastes can be made at the point of generation, as that term is currently understood to mean “the point at which a waste exits the unit in which it was generated”. [40 CFR 261.4(c)] Natural variation occurs in laboratory waste streams due to changes made during experimental processes, the variation in inputs to waste streams (e.g. samples being analyzed), and changes that can occur upon exiting a process (e.g. degradation of organic substances.) To require full designation at the point and time of generation would require research and/or support staff to continually re-evaluate waste being accumulated in the light of additions to the satellite accumulation container. For automated analytical instruments, for instance, wastes might have to be re-analyzed daily to determine levels of metals in the waste until accumulation of a given quantity was completed. Indeed, PNNL has received indications that the exit point from the process, not the accumulation container, is the true point of generation where waste must be fully characterized. This is clearly impractical for small volume, variable waste streams, especially if analysis is necessary for full designation.

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<sup>1</sup> Pacific Northwest National Laboratory is a multiprogram research laboratory operated by Battelle Memorial Institute for the U.S. Department of Energy.

We do not believe EPA intended this situation to occur. On the contrary, EPA intended for waste to accumulate at or near the point of generation in a satellite area prior to its movement to a 90-day accumulation area or TSD under reduced requirements, and stated that such accumulation did not present a threat to human health and the environment if it followed those requirements, i.e. 40 CFR 262.34. [49 FR 49568 (12/20/84).] The present situation has arisen as a result of the further definition of “point of generation” necessary for proper implementation of land disposal restrictions requirements.

We also do not believe EPA intended that any staff member responsible for a process that generates waste collected at a satellite accumulation point be trained in waste designation or detailed waste management requirements. We do not believe this is practiced in general industry and should not be expected at laboratory facilities. In addition, as stated in the Howard Hughes study, “Requiring laboratory staff to acquire this level of expertise is not practical or productive.”

The current regulatory scheme does not support a flexible approach, and has resulted in an expectation for full designation at the point of generation. If this issue is not addressed soon, PNNL expects to be required to make major changes to the way it performs research activities, reducing its ability to do so in a cost-competitive and environmentally sound fashion.

Proper waste designation is more important than ever due to the land disposal restrictions requirements. We urge EPA to craft the regulatory approach to allow trained research support staff to fully designate waste after accumulation in order to provide for full LDR compliance and proper disposal while assuring safe management during waste accumulation periods.

*What training is needed for lab personnel concerning hazardous waste determinations (e.g., full RCRA training or training that is made specific to chemical management duties)?*

We would suggest that training required for laboratory personnel would be consistent with the laboratory standards prescribed by OSHA for chemical exposures (29 CFR 1910.1450). Additional training when waste is accumulated should include emergency response (e.g. knowing emergency signals). Lab personnel would need further training if they were to conduct other RCRA-regulated activities such as 90-day waste accumulation, acting as an emergency coordinator pursuant to 40 CFR 265.55, or conducting treatment by generator activities.

*How should waste be labeled so it can be appropriately managed as hazardous waste (e.g., the words “hazardous waste” or a detailed chemical description)?*

We believe the term “hazardous waste” tends to be adequate to assure proper management within a laboratory setting. Any material meeting the definition of hazardous waste is subject to requirements at the point of generation. Any hazardous waste is referred to trained specialists for ultimate management.

We do not envision greater safety being provided by more detailed chemical descriptions being provided on the container. Such description might be difficult to do for waste being accumulated if the waste varies somewhat in composition, as described above. It might also interfere with readability if too much information is required on the label, since many satellite accumulation containers in the laboratory setting are much smaller than 55 gallons in capacity (e.g. one-gallon jugs.)

PNNL's experience is that utilizing "major risk" labeling [as required by the State of Washington Department of Ecology (Ecology)] is helpful at the point of generation. For instance, it helps research staff identify and separate incompatible wastes. There are some drawbacks to the system, however, e.g. confusion as to the meaning of the word "toxic" to represent a hazard, as that word is used differently in EPA, Ecology, DOT, and OSHA regulations.

*Where should the hazardous waste determination be made (e.g., on the bench or in the 90 to 180 day storage area)?*

We believe waste designation should be performed at the 90-day accumulation area by support staff trained in designation requirements. This practice would allow knowledgeable support staff to acquire all required information to properly ascertain all designation information and document that information. Any analytical work necessary to confirm designation information (which happens more often for variable-content waste streams) could be done at that time.

We also believe that if a laboratory has a permitted treatment and/or storage unit, designation can be performed onsite after the waste is accepted into the permitted unit. Full waste designation should not be a requisite for management in an on-site treatment and/or storage unit. In this case, the waste analysis plan must establish "safe storage" waste acceptance criteria that we believe must address at least elements of ignitability, corrosivity, reactivity, and incompatibility. After the waste is accepted into the permitted unit, the rest of the waste designation can be performed.

It could be acceptable if EPA were to determine that the determination should be made as soon as possible after satellite accumulation is completed (i.e. the accumulation limit is reached, or the process generating the waste ends), if enough time is made available to collect the process knowledge and analytical data necessary to make the designation.

#### Satellite Accumulation Accumulation Time

*How should these requirements be applied in a laboratory context?*

The requirement to immediately mark SAA containers with accumulation date and move them to a 90-day accumulation area within three days is not interpreted the same by Ecology as by EPA. EPA's Faxback 13410 indicates that the three days does not count against the 90-day accumulation period. Ecology regulations count this three-day period

in the 90-day accumulation period [WAC 173-303-200(3)(c).] 40 CFR 262.34 should be clear on this point in order to avoid confusion.

*How often do laboratories accumulate more than 55 gallons of waste in their SAA?*

PNNL's experience is that its laboratories seldom accumulate more than 55 gallons of waste in a given SAA. This is because of the limited scope of research activities, because of the desire to limit staff exposures to hazardous substances, and because of the limited amount of space that is available in many laboratories.

*What, if any, difficulties do environmental health and safety personnel have responding to waste pick-up calls, e.g., within the three day time limit?*

Two types of difficulties can arise. Since pickups are usually performed weekly on Thursdays at PNNL (specifically because of this time limit), any pick-up call that occurs on Monday or Friday requires a special pickup to be performed. This requires rescheduling of facility, support, research, and transportation staff to make the pickup in a timely manner. The more significant difficulty is that any pickup call made on Friday must be done on Monday, as Saturday and Sunday are not scheduled workdays for waste management staff. This may not allow for adequate planning time for the pickup, and requires special efforts (e.g. overtime) if Monday is a holiday. We note that an EPA letter (Faxback 12859) authorized one state to word this requirement as "three working days", and we would encourage EPA to adopt this wording into 40 CFR 262.34.

*How would a longer time-frame for removal impact the cost of waste management and the ability to protect human health and the environment?*

Efficiency would be realized in that special pick-ups would be minimized (including those occurring on three-day weekends). Human health and the environment is protected in the same manner as during accumulation. EPA has previously determined [49 FR 49568 (12/20/84)] that accumulation of up to 55 gallons of waste at the initial point of generation does not pose an unacceptable risk to human health and the environment.

#### Treatment in SAAs

*What types of treatment, other than neutralization, are laboratory personnel currently performing or would like to perform?*

PNNL's annual Dangerous Waste Report for calendar year 2002 reported that all treatment by generator activities in 2002 were neutralization. Other types of treatment are being investigated.

*What would be the benefits of the desired types of treatment?*

We understand this question to relate to the possibility of allowing treatment by generator (TBG) activities to occur in SAAs. This activity is currently permissible in the State of

Washington and is routinely performed by PNNL staff. Ecology has imposed certain requirements on treatment by generator activities (including those in SAAs) in its Technical Information Memorandum (TIM) 96-412, "Treatment by Generator". These requirements include contingency planning and emergency preparedness; personnel training; use of secondary containment systems; general safety standards; and reporting and recordkeeping. These requirements are not overly burdensome and enable treatment in satellite areas to be equally protective of human health and the environment as if they were conducted in a 90-day accumulation area.

For a description of the benefits of TBG, Ecology's TIM 96-412 says it best:

"The Department of Ecology actively promotes treatment by generator options for several reasons. The Hazardous Waste Management Act (RCW 70.105.150) lists a waste management hierarchy where treatment is preferred over disposal of waste. By encouraging proper on-site treatment, Ecology is working towards the goals of that hierarchy. It should be noted that waste reduction is the ultimate goal." [PNNL notes that RCRA contains a similar hierarchy.]

"The Washington State Hazardous Waste Plan (January, 1992) recommends a 'close to home' policy. The goal of this policy is 'self-sufficiency on the part of individual generators and TSDs, the state as a whole, and the Pacific Northwest region.' Part 2.3 of the Plan states that 'The management of wastes on-site should be more actively promoted, to the extent this is environmentally desirable and economically feasible. If other environmental factors are equal, on-site or local management is preferred because it minimizes transportation risks, limits the transfer of risk to other communities, and results in the application of appropriate, waste-specific technologies.'

Lastly, the Ecology *Regulatory Impediment Study* (February, 1993) found that treatment by generator "is not being used to full advantage." The study states that rules governing treatment by generator lack clear authority, are not self-implementing, and do not describe treatment by generator administrative procedures. This revised TIM solves those problems."

Hence increased treatment by generator is a desirable option for EPA to consider in reducing the disposal of hazardous wastes, or making those wastes safe for disposal; promote local and regional self-sufficiency in waste treatment where appropriate; reduce transportation of hazardous waste or make those wastes safer for transport; and overcome regulatory impediments to safe management of waste.

#### Other Issues

EPA solicited our thoughts on other issues specific to academic and research laboratories. PNNL would like to offer the following issues regarding satellite accumulation that are not specific to the issues discussed above.

### *General Scope of the Rule*

EPA should ensure that the rule covers all appropriate laboratory settings. In particular, government and private laboratories share the same waste management issues as laboratories in an academic setting. PNNL hosts many students throughout the year, and especially during summer research fellowships. If EPA is concerned about abuse of application of this policy in non-laboratory settings, EPA should establish a definition that will prevent such abuse.

### *Satellite Accumulation Requirements*

Many of the provisions of satellite accumulation are readily adaptable to a laboratory operations context and have been successfully implemented. Ecology has been proactive in assisting generators with implementing the requirements for satellite accumulation areas, especially with their TIM 94-120, "Satellite Accumulation."

Several provisions of satellite accumulation are problematical in the research setting. These include:

- Several staff may perform a single project-related activity at once. Although the process may be taking place "in parallel" in the same room or adjacent rooms, it is occurring with two separate apparatus. This usually causes PNNL to establish separate accumulation areas for the wastes, as they may be interpreted as different waste streams due to physical separation. If the definition of "waste stream" could be revised to allow co-accumulation of such wastes, the number of SAAs required could be reduced while maintaining safe accumulation practices.
- The requirement that the satellite accumulation point be "at or near" the point of generation sometimes causes problems in a research setting. If research work is taking place in a fume hood in a small laboratory room, for instance, the definition may be interpreted to allow accumulation in an adjacent room. However, this has seldom been considered permissible by regulatory inspectors. See, e.g., EPA Region X memorandum of 3/26/90. Other problems arise with wastes that must be accumulated under special conditions, e.g. Uniform Fire Code regulations.
- Satellite accumulation containers must be under the control of the operator (or, in Washington, secured at all times.) The definition of the "operator" of the process may be problematical. For instance, research associates or students working under the general supervision of the lead researcher may actually be generating the waste. Such support staff may be rotated in and out of the project and may not be fully cognizant of the entire process. This knowledge deficiency can be interpreted by inspectors as failure to control the accumulation containers.

- Similarly, the definition of “under control” has been interpreted widely in the field. Researchers typically do not spend all day, every day, in the laboratory in which satellite accumulation is taking place. The use of container locks on small containers often used for waste accumulation in laboratories is not practical, and many containers do not have such devices available in any case. Locking entire laboratory rooms is often impractical, due to the diversity of activities and staff using that space. Access control to an entire building was determined to be inadequate by Ecology to assure that that facility’s SAAs were “under control of the operator”, even though the company is the “operator.”
- SAAs are required to comply with 40 CFR 265.173(a), i.e. such containers must be kept closed except when adding or removing waste. This has led to numerous questions during inspections about adequate closure. For purposes of storage, the closure should certainly be leak-proof. However, this causes problems in the laboratory setting. For instance, a five-gallon jug is used to collect liquid effluent from an automated analyzer. A tube leads from the instrument to the container, and a hole is drilled in the jug’s lid to allow the tube to be inserted. In order to allow for air displacement, the tube must either fit loosely in the hole or a second hole must be drilled. During any period of inactivity (analysis is not in progress), the container theoretically should be re-capped to avoid its not being “closed”. This is difficult to accomplish in the laboratory setting, as analysis may stop and start frequently and automatically without intervention by laboratory staff. While all due care is taken to prevent evaporation and leakage in case of upset, the definition of “closed” should be viewed somewhat differently in this context than the degree of closure of containers in storage at TSD facilities (the standard on which 265.173(a) is based.)
- Laboratories sometimes accumulate waste for short periods before placing such waste in a SAA container. Such “two-stage” accumulation may take place because either (1) the piece of equipment contains a built-in accumulation container or (2) the construction of the experimental apparatus precludes the use of a standard accumulation container. EPA’s RCRA Hotline Summary of February 1999 (Faxback 14337) indicates that this practice is unacceptable. Ecology agrees, but has exercised enforcement discretion to allow equipment with built-in waste accumulation devices to be used and emptied into SAA containers. EPA should consider allowing such devices to be used as long as the “official” SAA is located nearby.

We appreciate the opportunity to provide these comments and would welcome the opportunity to participate further in the rulemaking process if EPA desires.

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